WHAT IS CLAIMED IS:

1. A surgical instrument comprising:

a blade;

a housing in which the blade moves, the housing having a long axis, said housing being concave about at least a distal portion of its long axis and being curved along its long axis;

a transmission that converts rotary motion to reciprocating, linear motion, wherein the transmission is coupled to the blade such that the blade moves reciprocally in the housing;

a first opening in the housing through which a portion of the blade is exposed;

a second opening at a distal end of the housing;

a cutting surface on said exposed portion of the blade, said surface configured to perform at least one of grinding, filing, and cutting of tissue;

at least one fiberoptic in or on the housing, for transmission of at least one of a video signal and illumination light; and

a pump that is mechanically coupled to the transmission.

2. An apparatus for translating a rotary motion to a linear motion, the apparatus comprising:

two surfaces of two respective bearings, the two surfaces being a substantially fixed distance apart; and

a cam that rotates about a central axis that is (a) substantially parallel to a direction of the linear motion of the two surfaces and (b) substantially perpendicular to the plane extending between the two surfaces;

wherein said central axis is at an angle to a plane extending between the two surfaces;

the cam having a curvilinear body of nonuniform thickness, the curvilinear body being disposed at an angle to the central axis of the cam;

wherein the curvilinear body has a shape comprising at least two toruses, the at least two toruses being partially superimposed, and each of said at least two toruses

has a central axis, wherein the central axes of the at least two toruses are at an angle to each other; and

wherein the body continuously contacts the two surfaces as the cam rotates about the central axis, such that the two surfaces remain at the substantially fixed distance apart as they move linearly back and forth in reciprocating motion in response to the cam's rotation about the central axis.

3. An apparatus for translating a rotary motion to a linear motion, the apparatus comprising:

two surfaces that are a substantially fixed distance apart; and

a cam that rotates about a central axis, said central axis being at an angle to a plane extending between the two surfaces;

the cam having a curvilinear body, the body having a nonuniform thickness, wherein the body continuously contacts the two surfaces as the cam rotates about the central axis, such that the two surfaces remain at the substantially fixed distance apart as they move linearly in response to the cam's rotation about the central axis.

4. The apparatus of claim 3, wherein said cam's central axis is substantially parallel to a direction of the linear motion of the two surfaces.

5. The apparatus of claim 3, wherein said central axis is substantially perpendicular to the plane extending between the two surfaces.

6. The apparatus of claim 3, wherein the two surfaces move linearly back and forth in reciprocating motion in response to the cam's rotation about the central axis.

7. The apparatus of claim 3, wherein the curvilinear body has a shape comprising at least two toruses, the at least two toruses being partially superimposed, and each of said at least two toruses has a central axis, wherein the central axes of the at least two toruses are at an angle to each other.

8. The apparatus of claim 3, wherein at least one bearing comprises the two surfaces.

9. The apparatus of claim 8, wherein two bearings respectively comprise the two surfaces.

10. The apparatus of claim 3, wherein the curvilinear body is disposed at an angle to the central axis of the cam.

11. An transmission for translating a rotary motion to a linear motion, the apparatus comprising:

two surfaces that are a substantially fixed distance apart;

a cam that rotates about a central axis, said central axis being at an angle to a plane extending between the two surfaces; and

the cam having means for continuously contacting the two surfaces as the cam rotates about the central axis, such that the two surfaces remain at the substantially fixed distance apart as they move linearly in response to the cam's rotation about the central axis.

12. The apparatus of claim 11, wherein said cam's central axis is substantially parallel to a direction of the linear motion of the two surfaces.

13. The apparatus of claim 11, wherein said central axis is substantially perpendicular to the plane extending between the two surfaces.

14. The apparatus of claim 11, wherein the two surfaces move linearly back and forth in reciprocating motion in response to the cam's rotation about the central axis.

15. The apparatus of claim 11, wherein the means for continuously contacting the two surfaces has a shape comprising at least two toruses, the at least two toruses being partially superimposed, and each of said at least two toruses has a central axis, wherein the central axes of the at least two toruses are at an angle to each other.

16. The apparatus of claim 11, wherein the means for continuously contacting the two surfaces is disposed at an angle to the central axis of the cam.

17. The apparatus of claim 11, wherein at least one bearing comprises the two surfaces.

18. The apparatus of claim 17, wherein two bearings respectively comprise the two surfaces.

19. A surgical instrument comprising:

a blade;

a housing in which the blade moves, the housing having a long axis;

a transmission that converts rotary motion to reciprocating, linear motion, wherein the transmission is coupled to the blade such that the blade moves reciprocally in the housing;

a first opening in the housing through which a portion of the blade is exposed; and

a cutting surface on said exposed portion of the blade, said surface configured to perform at least one of grinding, filing, and cutting of tissue.

20. The surgical instrument of claim 19, wherein the housing is concave about at least a portion of its long axis.

21. The surgical instrument of claim 20, wherein the housing is concave about at least a distal portion of its long axis.

22. The surgical instrument of claim 19, wherein the housing is convex about at least a portion of its long axis.

23. The surgical instrument of claim 22, wherein the housing is convex about at least a distal portion of its long axis.

24. The surgical instrument of claim 19, wherein the first opening is in an opening surface on the housing.

25. The surgical instrument of claim 19, wherein the housing is curved along its long axis, to assist in placing the surgical instrument in the body of a patient.

26. The surgical instrument of claim 19, wherein the blade is substantially flat.

27. The surgical instrument of claim 25, wherein the housing is curved along its long axis in a direction toward the opening surface.

28. The surgical instrument of claim 19, further comprising at least one bearing retainer for reducing friction.

29. The surgical instrument of claim 28, wherein said at least one bearing retainer has at least one slot configured to transmit fluid toward a distal end of the instrument.

30. The surgical instrument of claim 19, further comprising at least one fiberoptic in or on the housing, for transmission of at least one of a video signal and illumination light.

31. The surgical instrument of claim 19, wherein the housing has at least a second opening at a distal end of the housing.

32. The surgical instrument of claim 30, further comprising at least two lenses coupled to the at least one fiberoptic.

33. The surgical instrument of claim 32, wherein at least one of the at least two lenses is disposed at a distal end of the housing, and another of the at least two lenses is disposed in proximity to the first opening in the housing.

34. The surgical instrument of claim 19, further comprising a pump for pumping fluid through the surgical instrument.

35. The surgical instrument of claim 34, wherein the pump is mechanically coupled to the transmission.

36. The surgical instrument of claim 19, wherein the transmission comprises:

two surfaces that are a substantially fixed distance apart;

a cam that rotates about a central axis, said central axis being at an angle to a plane extending between the two surfaces; and

the cam having a curvilinear body, the body having a nonuniform thickness, wherein the body continuously contacts the two surfaces as the cam rotates about the central axis, such that the two surfaces remain at the substantially fixed distance apart as they move linearly in response to the cam's rotation about the central axis.

37. The apparatus of claim 36, wherein said cam's central axis is substantially parallel to a direction of the linear motion of the two surfaces.

38. The apparatus of claim 36, wherein said central axis is substantially perpendicular to the plane extending between the two surfaces.

39. The apparatus of claim 36, wherein the two surfaces move linearly back and forth in reciprocating motion in response to the cam's rotation about the central axis.

40. The apparatus of claim 36, wherein the curvilinear body has a shape comprising at least two toruses, the at least two toruses being partially superimposed, and each of said at least two toruses has a central axis, wherein the central axes of the at least two toruses are at an angle to each other.

41. The apparatus of claim 36, wherein at least one bearing comprises the two surfaces.

42. The apparatus of claim 41, wherein two bearings respectively comprise the two surfaces.

43. The apparatus of claim 36, wherein the curvilinear body is disposed at an angle to the central axis of the cam.

44. The surgical instrument of claim 19, wherein the transmission comprises:

two surfaces that are a substantially fixed distance apart;

rotation means that rotates about a central axis, said central axis being at an angle to a plane extending between the two surfaces; and

the rotation means continuously contacting the two surfaces as the rotation means rotates about the central axis, such that the two surfaces remain at the substantially fixed distance apart as they move linearly in response to the rotation means's rotation about the central axis.

45. The apparatus of claim 44, wherein said cam's central axis is substantially parallel to a direction of the linear motion of the two surfaces.

46. The apparatus of claim 44, wherein said central axis is substantially perpendicular to the plane extending between the two surfaces.

47. The apparatus of claim 44, wherein the two surfaces move linearly back and forth in reciprocating motion in response to the cam's rotation about the central axis.

48. The apparatus of claim 44, wherein at least one bearing comprises the two surfaces.

49. The apparatus of claim 48, wherein two bearings respectively comprise the two surfaces.

50. The apparatus of claim 44, wherein the curvilinear body has a shape comprising at least two toruses, the at least two toruses being partially superimposed, and each of said at least two toruses has a central axis, wherein the central axes of the at least two toruses are at an angle to each other.

51. The apparatus of claim 44, wherein the curvilinear body is disposed at an angle to the central axis of the cam.

52. The surgical instrument of claim 19, wherein the transmission comprises:

two surfaces that are a substantially fixed distance apart;

a cam that rotates about a central axis, said central axis being at an angle to a plane extending between the two surfaces; and

the cam having means for continuously contacting the two surfaces as the cam rotates about the central axis, such that the two surfaces remain at the substantially fixed distance apart as they move linearly in response to the cam's rotation about the central axis.

53. The apparatus of claim 52, wherein said cam's central axis is substantially parallel to a direction of the linear motion of the two surfaces.

54. The apparatus of claim 52, wherein said central axis is substantially perpendicular to the plane extending between the two surfaces.

55. The apparatus of claim 52, wherein the two surfaces move linearly back and forth in reciprocating motion in response to the cam's rotation about the central axis.

56. The apparatus of claim 52, wherein the means for continuously contacting the two surfaces has a shape comprising at least two toruses, the at least two toruses being partially superimposed, and each of said at least two toruses has a central axis, wherein the central axes of the at least two toruses are at an angle to each other.

57. The apparatus of claim 52, wherein at least one bearing comprises the two surfaces.

58. The apparatus of claim 57, wherein two bearings respectively comprise the two surfaces.

59. The apparatus of claim 52, wherein the means for continuously contacting the two surfaces is disposed at an angle to the central axis of the cam.

60. A pump comprising:

a fluid path;

two plungers configured to at least partially occlude said fluid path;

a cam configured to cause said two plungers to at least partially occlude said fluid path alternatingly; and

at least one check valve along said fluid path for reducing backflow of fluid within said fluid path.

61. The pump of claim 60, wherein the cam translates in a direction that is substantially perpendicular to a long axis of at least one of said two plungers.

62. The pump of claim 61, wherein the cam translates in a direction that is substantially perpendicular to a long axis of each of said two plungers.

63. A pump comprising:

a fluid path;

two plungers configured to at least partially occlude said fluid path;

means for causing said two plungers to at least partially occlude said fluid path alternatingly; and

at least one check valve along said fluid path for reducing backflow of fluid within said fluid path.

64. The surgical instrument of claim 34, wherein the pump comprises:

a fluid path;

two plungers configured to at least partially occlude said fluid path;

a cam configured to cause said two plungers to at least partially occlude said fluid path alternatingly; and

at least one check valve along said fluid path for reducing backflow of fluid within said fluid path.

65. The surgical instrument of claim 64, wherein the cam translates in a direction that is substantially perpendicular to a long axis of at least one of said two plungers.

66. The pump of claim 65, wherein the cam translates in a direction that is substantially perpendicular to a long axis of each of said two plungers.

67. The surgical instrument of claim 35, wherein the pump comprises:

a fluid path;

two plungers configured to at least partially occlude said fluid path;

a cam configured to cause said two plungers to at least partially occlude said fluid path alternatingly; and

at least one check valve along said fluid path for reducing backflow of fluid within said fluid path.

68. The surgical instrument of claim 67, wherein the cam translates in a direction that is substantially perpendicular to a long axis of each of said two plungers.

69. The surgical instrument of claim 19, further comprising at least one opening in the exposed portion of the blade, for transmitting fluid.

70. The surgical instrument of claim 19, wherein the cutting surface comprises an abrasive material.

71. The surgical instrument of claim 19, wherein the cutting surfaces comprises diamond.

72. The surgical instrument of claim 19, wherein the blade comprises stainless steel.

73. The surgical instrument of claim 19, further comprising a handpiece coupled to the housing.

74. The surgical instrument of claim 19, further comprising a video camera.

75. The surgical instrument of claim 74, wherein the camera is configured to couple with a fiberoptic that extends to a distal end of the housing.

76. The surgical instrument of claim 73, wherein a video camera is located in the handpiece.

77. The surgical instrument of claim 76, further comprising a watertight seal in the handpiece.

78. The surgical instrument of claim 77, wherein the handpiece is configured to contain the video camera in a chamber such that the watertight seal reduces or prevents ingress of at least one of water and bacteria from outside the handpiece into the chamber containing the video camera in the handpiece.

79. The surgical instrument of claim 73, further comprising a motor in the handpiece, said motor configured to power the rotary motion.

80. The surgical instrument of claim 79, wherein said motor comprises a gas turbine.

81. The surgical instrument of claim 19, further comprising a cord configured to couple to a proximal end of the surgical instrument, said cord comprising at least one of a fiberoptic, an electrical line, an irrigation channel, a suction line, and a gas tube for powering a gas turbine motor in the surgical instrument.

82. A surgical instrument comprising:

a blade;

a housing in which the blade moves, the housing having a long axis;

converting means for converting rotary motion to reciprocating, linear motion, wherein the converting means is coupled to the blade such that the blade moves reciprocally in the housing;

a first opening in the housing through which a portion of the blade is exposed; and

a cutting surface on said exposed portion of the blade, said surface configured to perform at least one of grinding, filing, and cutting of tissue.

83. The surgical instrument of claim 82, wherein the blade is substantially flat.

84. The surgical instrument of claim 82, wherein the housing is concave about at least a portion of its long axis.

85. The surgical instrument of claim 84, wherein the housing is concave about at least a distal portion of its long axis.

86. The surgical instrument of claim 82, wherein the housing is convex about at least a portion of its long axis.

87. The surgical instrument of claim 86, wherein the housing is convex about at least a distal portion of its long axis.

88. The surgical instrument of claim 82, wherein the housing is curved along its long axis to assist in placing the surgical instrument in the body of a patient.

89. The surgical instrument of claim 82, further comprising at least one bearing retainer for reducing friction.

90. The surgical instrument of claim 89, wherein said at least one bearing retainer has at least one slot configured to transmit fluid toward a distal end of the instrument.

91. The surgical instrument of claim 82, further comprising at least one fiberoptic in or on the housing, for transmission of at least one of a video signal and illumination light.

92. The surgical instrument of claim 82, wherein the housing has at least a second opening at a distal end of the housing.

93. The surgical instrument of claim 91, further comprising at least two lenses coupled to the at least one fiberoptic.

94. The surgical instrument of claim 93, wherein at least one of the at least two lenses is disposed at a distal end of the housing, and at least another of the at least two lenses is disposed in proximity to the first opening in the housing.

95. The surgical instrument of claim 82, further comprising a pump for pumping fluid through the surgical instrument.

96. The surgical instrument of claim 95, wherein the pump is mechanically coupled to the transmission.

97. A surgical instrument comprising:

a blade;

a housing in which the blade moves, the housing having a long axis;

converting means for converting rotary motion to reciprocating, linear motion, wherein the converting means is coupled to the blade such that the blade moves reciprocally in the housing;

a first opening in the housing through which a portion of the blade is exposed; and

cutting means on said exposed portion of the blade, said cutting means configured to perform at least one of grinding, filing, and cutting of tissue.

98. The surgical instrument of claim 97, wherein the blade is substantially flat.

99. An apparatus for translating a rotary motion to a linear motion, the apparatus comprising:

two surfaces that are a substantially fixed distance apart; and

rotation means that rotates about a central axis, said central axis being at an angle to a plane extending between the two surfaces;

wherein the rotation means is configured to continuously contact the two surfaces as the rotation means rotates about the central axis, such that the two surfaces remain at the substantially fixed distance apart as they move linearly in response to the rotation means's rotation about the central axis.

100. The apparatus of claim 99, wherein at least one bearing comprises the two surfaces.

101. The apparatus of claim 100, wherein two bearings respectively comprise the two surfaces.

102. The apparatus of claim 99, wherein said rotation means's central axis is substantially parallel to a direction of the linear motion of the two surfaces.

103. The apparatus of claim 99, wherein said central axis is substantially perpendicular to the plane extending between the two surfaces.

104. The apparatus of claim 99, wherein the two surfaces move linearly back and forth in reciprocating motion in response to the rotation means's rotation about the central axis.

105. The apparatus of claim 99, wherein the rotation means has a shape comprising at least two toruses, the at least two toruses being partially superimposed, and each of said at least two toruses has a central axis, wherein the central axes of the at least two toruses are at an angle to each other.